

SCHOOL LIFE

OFFICIAL JOURNAL OF THE ★ ★ ★ ★ ★ ★ ★ ★

OFFICE OF EDUCATION

IN THIS ISSUE

AEROSPACE AND THE CURRICULUM

by J. DAN HULL

ACTION RESEARCH

by JANE FRANSETH



December 1959

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THE OFFICE OF EDUCATION gets pretty much left out of its own journal. It publishes *School Life* to disseminate the information it has gathered, not to advertise itself.

In other words, *School Life*, being exclusively a magazine about education in the United States—about national and regional trends, about practices, programs, philosophy, and facts—has given no space in recent years to the warm, living organization that creates it, no space to the staff of eminent educators who supply it with articles and information, no space to the work they do.

This is a deplorable omission, we begin to think; and with this issue we start using this corner of this page to give small glimpses of the Office of Education itself.

As we see it, the Office of Education is its specialists. They are the nearly 300 men and women who have been persuaded to leave their practitioner's jobs in education—in the schools and colleges, the research laboratories, the State departments of education—to come to the Office and serve the entire United States. They have been handpicked: the Office wants the educator who has worked in more than one geographic area and held more than one type of job, who has a broad background in education and is known for his competence in at least one special field.

Twenty of these specialists have had a hand in this issue. All support our thesis that specialists in the Office are not mere theorists in an ivory tower. Take our first two authors. Dr. Hull was a high school principal, both in Missouri and in Indiana, and a professor of school administration besides. Dr. Franseth began by teaching a rural school in Michigan, later became an elementary school supervisor, and just before coming to the Office was at the University of Georgia, directing a State program for educating county school supervisors.

As for the Office's not being an ivory tower—that is a long story it will take us months to tell.—THE EDITOR.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE • ARTHUR S. FLEMMING, *Secretary*

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CARROLL B. HANSON, *Director, Publications Services*

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THEODORA E. CARLSON
Editor

ADA JANE KELLY
Associate Editor

CATHERINE P. WILLIAMS
Assistant to the Editor

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Brief.

EDUCATION AND GOVERNMENT

Reports

Degree mills

DEGREE mills, or commercial enterprises that sell degrees for cash and a token educational effort, are defrauding the public of an estimated \$75 million a year, robbing the estimated 750,000 persons in various parts of the world to whom they sell, damaging the prestige of U.S. higher education and legitimate correspondence courses, creating misunderstanding in the public mind, and damaging American prestige abroad.

Because such bogus enterprises, advertising themselves as institutions of higher education, have become a blight on American education, the U.S. Commissioner of Education, at the request of Arthur S. Flemming, Secretary of Health, Education, and Welfare, is making a three-pronged attack on them.

As its first move, the Office of Education will compile and maintain a list of institutions found to be conducting questionable activities. In future editions of *Education Directory Part 3, Higher Education and Accredited Higher Institutions* the Office will warn the public of their fraudulence.

Second, the Commissioner will cooperate with officials of the Department of Justice, Department of State, the Federal Trade Commission, the Office of the Postmaster General, and other agencies in reexamining and clarifying Federal powers to control such enterprises.

Third, because degree mills award many so-called religious degrees, the

Commissioner will ask religious leaders for their help in making the attack effective.

In announcing the Office program Secretary Flemming commended the American Council on Education on its 1959 report, *American Degree Mills*, by Robert H. Reid, and the Council of State Governments for its efforts to develop uniform legislation suitable for adoption by all States.

Free poster on NDEA

AS A public service, the Grolier Society, Inc., has prepared a poster reporting on the first 10 months of the National Defense Education Act and has made a supply of copies available to the Office of Education. Featuring a map of the United States showing the NDEA funds received by each State, Puerto Rico, and the Virgin Islands between September 2, 1958, and July 1, 1959, it carries messages by Arthur S. Flemming, Secretary of Health, Education, and Welfare, and Lawrence G. Derthick, Commissioner of Education. It is free and may be had in any quantity desired on request to the Publications Inquiry Unit, Office of Education, Washington 25, D.C.

Surplus property

THE Department of Health, Education, and Welfare transferred more than \$300 million worth of Government surplus property to schools and colleges in fiscal year 1959, and it expects to transfer \$400

million worth in 1960. Part of the increase will be due to a new system for the distribution of electronic equipment.

The new system, now in permanent operation at naval supply centers in Norfolk, Va., Oakland and San Diego, Calif., and Clearfield, Utah, works like this: Teachers go to the center, pick out equipment they can use, pay a minimum handling charge of 1 cent a pound, and take it away with them. Because teachers have not in the past had a direct part in the selection, many items that they would have recognized as useful have been overlooked by Government and school officials and sold as salvage.

Teachers have been quick to take advantage of the new program. In three distributions at Norfolk, teachers from 55 schools and colleges in Virginia and 3 neighboring States picked up testing and measuring devices, tubes, condensers, transformers, and other items for teaching industrial arts, physics, engineering, general science, electronics, and technical courses. In one day at the Oakland Center, approximately 100 California science teachers from 39 schools, colleges, and universities selected more than 23,000 pounds of equipment.

A teacher or other school official interested in selecting property must be authorized to represent his institution or be accompanied by an authorized representative; and be authorized to obligate his school to pay the necessary handling charge. School officials must make arrangements to participate through their own

State agencies for surplus property.

The Department has recommended that this system of distribution of electronic equipment be extended to other regions of the country.

The Department is taking three other measures to get surplus property into classrooms. To learn what is available, it has cooperated with the Department of Defense and the Office of Civil and Defense Mobilization in making a spot survey of surplus property throughout the country. To learn what school and college laboratories need, the Office of Education has entered into a cooperative research contract with the University of Toledo which provides for an inventory of science facilities and equipment in 870 schools in 8 States.

As a result of a Department survey in 1958 showing that the schools needed 108,000 general purpose machine tools in vocational schools and in training and research programs in colleges and universities, more emphasis was put on the distribution of such tools, and the number donated was increased from 3,391 in 1958 to 10,031 in 1959.

Refugee Year teaching kit

TO CEASE being a refugee—that is the wish of the world's more than 15 million refugees, people made homeless by war, revolution, or persecution.

Because it is up to the rest of the world to make the refugee's wish come true, the United Nations General Assembly in December 1958 passed a resolution, cosponsored by the United States and supported by 62 other nations, designating July 1, 1959, to June 30, 1960, as World Refugee Year. A proclamation by President Eisenhower in May 1959 asks all United States citizens to cooperate with the United States Committee for Refugees in supporting the goals of the Year. The Committee's tasks are to inform the public about world refugee issues, to consult with Government and UN officials, to stimulate research on refugee problems, to work with voluntary agencies in the refugee

field, and to further American participation in World Refugee Year.

To help schools do their part during World Refugee Year the Committee has prepared a teaching kit which includes a teaching guide and pamphlets. The guide contains references to material that will make the topic meaningful to students and describes projects a school can undertake. The teaching kit is available from the United States Committee for Refugees, 11 West 42nd Street, New York 36, N.Y.

Safety in the school

BECAUSE learning safe work habits in the school is an important step toward industrial safety, the next President's Conference on Occupational Safety, March 1-3, 1960, will give a plenary session to the school's contribution to safety. The conference, the seventh meeting on safety to be called by the White House in the last 10 years, will be on "The Challenge of Safety in a Changing World." The session given over to education, in keeping with this theme, will center on "The Challenge to Schools for Safety in a Changing World."

The program of the session on school safety will consist of four formal papers followed by a panel discussion. The first paper, which will outline the role of the Office of Education, will be given by Commissioner of Education, Lawrence G. Derthick, who also will preside. The second paper, a report on the 1959 conference, will be given by John P. Walsh, director of the Trade and Industrial Branch of the Office of Education, who will serve as moderator. The two other papers will be given by William G. Carr, National Education Association, and Earle E. Hannaford, Industrial Conference of the National Safety Council, the former on the position of educators on occupational safety, and the latter on industry's position. Panel members of the discussion will represent education, industry, and labor.

Russian in the schools

OVER 400 secondary schools and about 50 elementary schools in the United States are teaching courses in the Russian language this year, according to an informal count kept in the Office of Education. Nearly all of these schools have added the courses only recently: less than two years ago *School Life* reported that only 16 schools were known to be teaching Russian.

ED-TV guide

THE FIRST Office of Education *Educational Teleguide* is now off the press. A central source of information for names and addresses connected with educational television, *Educational Teleguide* is an expansion of the appendix to the publication *Television in Education* (Office of Education Bulletin 1957, No. 21). Information in the new publication includes lists of noncommercial and closed-circuit TV stations, statewide networks, organizations and foundations, books and publications, sources of research on TV, higher education courses by TV, colleges granting credits for TV courses, and school districts using educational television.

Educational Teleguide sells for 30 cents a copy from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Women in retailing

QUALIFIED women have many opportunities in retailing. To guide those considering it as a career, the U.S. Department of Labor has issued a booklet, *Careers for Women in Retailing* (Women's Bureau Bulletin 271), which describes earnings and working conditions, positions in such fields as merchandising, personnel, sales promotion, operations, and management, and the qualifications each requires. It sells for 25 cents a copy from the Superintendent of Documents, U.S. Government Printing Office, Washington 25.

By J. DAN HULL, director, Instruction, Organization, and Services Branch

AEROSPACE and the CURRICULUM

*The new age
of space exploration
offers the classroom teacher
a gold mine of opportunity*

SINCE the space age began, on October 4, 1957, imaginative space enthusiasts of all sorts have been bombarding us with their points of view. As a result, most of us who are not scientists have had a hard time of it, trying to distinguish fiction from fact and reasonable expectation; and we are grateful indeed for those highly articulate men of science who have written and spoken about space for the express purpose of helping us out of our perplexity.



I am thinking now particularly of Lee A. DuBridge, physicist and president of the California Institute of Technology, whose article in the August 1959 issue of *Harper's Magazine*, "Sense and Nonsense About Space," surely has done much to improve public understanding of the matter. Some of the comments in his article are especially significant for teachers, who, more than any others I can think of, need to understand what the exploration of this new limitless area can mean to human beings, today, tomorrow, even twenty years from now.

In brief, Mr. DuBridge's comments are these, though my summary will hardly show the fine balance between restraint and hope that recommends his position:

All points *within* the solar system are well within the reach of a manmade vehicle, in a time reasonable from the standpoint of a man's life (23 days to Mars, 3 years to Neptune), but many points outside the solar system are *not* (28,000 years to the nearest star, 150,000 years to cross the Milky Way).

Conditions in space are different from anything man has experienced: there is no air to breathe; objects have no weight; one vehicle cannot overtake another in the same orbit; and if you want to go faster, you must slow down! Each strange condition presents puzzling technical problems to the men who hope to go into space.

Besides, the cost of putting a man and his supplies into a spatial orbit are so enormous that we need to evaluate the cost carefully in terms of our goals.

Our first goals for exploring space and the moon and other space stations should not be to colonize, to militarize, or to exploit. Rather our first goals should be to learn more about the earth itself, about the moon and the planets, and about the entire space environment.

For the present at least we do not have to incur the great cost of sending men out to gather all the information we want. We can send unmanned vehicles equipped with instruments to record a great variety of data. The greatest enthusiasts for space exploring are the astronomers, the meteorologists, the communications engineers, and the military technologists. No one now can even predict what kind of knowledge they will get from space, "but human beings have never yet . . . opened up new areas of inquiry without learning things that paid huge—and unforeseeable—rewards."

From Mr. DuBridge's analysis, we educators may draw several important inferences for the school curriculum.

Knowledge for its own sake

The first of these is that the schools need to emphasize basic science as distinguished from applied science. Basic science investigates nature for the simple purpose of better understanding it. Its great stimulus is curiosity—the desire to know just for the sake of knowing. It is concerned with fundamental concepts rather than practical considerations; its investigators never know where their research will lead them, nor do they much care which of their results will eventually be practical. Physicists tell a story about Faraday and an experiment he conducted in 1813, when he pushed a magnet through a coil of conductive wire and got a current of electricity that registered on a compass needle. A member of parliament watching the experiment asked, "What good is it?" and Faraday replied, "It is like a baby: you can't tell anything about it till it grows, but in all probability you will be able to tax it."

In the United States our achievements in basic science have not equalled our achievements in applied science.

Traditionally we Americans have not been greatly interested in answering such questions as, "What makes the lightning bug light?" We have been more concerned with practical things and in gaining knowledge for specific useful purposes; we have asked "Will it work?" and "What purpose will it serve?" We have produced great inventors, great engineers, and great manufacturers—men like Edison, Westinghouse, and Ford. In our emphasis on the practical and the immediately useful we have differed, in general, from Europeans, whose preeminence has been in basic science; and for all our brilliance in applied science, many of our achievements have grown from the basic discoveries of such Europeans as Faraday, Fermi, and Einstein.

Since American culture has emphasized applied science, the schools quite naturally have done the same. But the space age has changed our intellectual environment, and the new climate emphasizes knowing for the sake of knowing, as well as knowing for particular useful purposes. Already many science educators in the United States are emphasizing basic science; and while they are doing so, it is interesting to note, many European science educators are beginning to emphasize applied science.

How can our schools teach and emphasize science and mathematics as basic sciences? A conference held in the Office of Education in February 1958, on mathematics and science education in the public schools, summarized a number of ideas that can help to answer that question:

- ▶ Mastery of a limited number of concepts is preferable to covering much ground and getting only a partial understanding of many concepts.
- ▶ Science teaching must not be simply a transmitting of facts and principles for memorizing; it must help the student discover principles for himself.
- ▶ Science courses must be organized and taught so as to help pupils get the answers to their questions through vital experiences.
- ▶ Mathematics teachers must help pupils use mathematics as a way of thinking.
- ▶ Both science and mathematics teachers need to become skillful in setting up problem-solving situations and must always strive to develop in their pupils the ability to solve problems.
- ▶ Teachers should not expect all children to do the same thing at the same time and should provide each child with opportunities geared to his own needs and abilities.

But we are not confronted by an either-or situation. The schools need to emphasize both basic and applied science. After all, coming to understand science or mathematics is an intensely personal experience, requiring different ways of learning for different children; and our schools need to upgrade the knowledge and competence

of pupils of all kinds of ability. In general, talented pupils have more innate curiosity than less able pupils and are more inclined to explore scientific principles deeply. But it is also true that some talented pupils, like slow learners, comprehend scientific principles more rapidly if they approach them through laboratory experiences or learn of practical applications via radio and television; and for such pupils an emphasis on technology and applied science is particularly worthwhile.

Critical thinking

Unfolding developments in the space age give skillful teachers many an opportunity to lead their pupils into the exhilarating experience of critical thinking. There are opportunities to sense and define problems for study, to hypothesize on these problems, to collect, sort, and weigh evidence, and to distinguish fact from assumption. There are opportunities to teach the techniques and skills used in interpreting data and in generalizing on the basis of tested evidence.

For instance, pupils can be led to see how the scientist extends his senses by means of instrumented rockets and satellites which go out into space to collect data and send them back to earth for processing by elaborate electronic machines. Pupils can be shown how the scientist reasons from cause to effect as he predicts the pathway into space of a man-carrying vehicle, guiding it to avoid the regions of concentrated radiations; how he draws inferences from indirect evidence as he measures the energy of high-altitude particles by the tracks they make on a photographic plate.

International understanding

The aerospace age is adding impetus to our efforts, already stimulated by the air age, to improve international cooperation and understanding. A world of diminishing size has made such efforts both necessary and feasible.

Our schools can lead children to see that the tasks of discovery and exploration are too great to be performed by individuals working alone; that, rather, each nation must take a team approach, and that the teams of different nations must cooperate to help both themselves and each other.

During the International Geophysical Year, scientists from many nations cooperatively carried on programs of rocket and satellite research. To carry on and improve the fruitful international relations characterizing that year, an International Committee on Space Research has been established by the International Council of Scientific Unions. In many school activities and certainly in language and social studies classes as well as in mathematics and science classes, teachers have opportunities to follow with their pupils the progress of international

scientific committees and so to contribute to the general understanding that makes such committees possible. And if school children in many countries will share in this interest in the work of international scientific committees, all of them together will do much to foster the spirit of mutual assistance that is the foundation of peace.

Built-in motivation

From its beginning, the air age has had glamor for children and youth. In their vocational ambitions, many small boys have preferred the airplane pilot to the policeman or fireman. Boys have been interested in building and flying model aircraft, from the simple rubberband model to the more complicated twin-engine gasoline-powered model. Both boys and girls have enjoyed reading of the actual exploits of the Wright Brothers and General Billy Mitchell, and of the fanciful adventures of Buck Rogers and his companions. Quite properly, teachers have harnessed the interest of youth in the air age and used it as a motivating force in the teaching of reading, writing, computation, science, geography, and other school subjects.

Now the aerospace age presents even more opportunities to motivate pupils, for it has all the appeal of the novel, the dramatic, and the unknown. Just at a time when man has almost completed the physical exploration of this earth, we have pushed our frontiers beyond the earth itself. As yet we can hardly guess at what the physical exploration of regions in space can mean for us, but we are certain beyond doubt that for the human intellect it opens new vistas of unprecedented challenge.

Teachers can use a child's curiosity and wonder to stimulate his learning not only in the basic sciences but in all subjects, and the advent of the space age can encourage creative and imaginative thinking in art, literature, and social studies. Concepts gained from space can be used to integrate the teaching of all these subjects.

Language arts

Language arts have high priority in aerospace education, for reasons that are provocative and far-reaching.

Scientists themselves must be able to communicate clearly among themselves—not only in their own language but in the language of other nations—if they are to avoid misunderstanding and duplication of effort.

Scientists must also be able to communicate with laymen and laymen must be able to communicate with other laymen. In an earlier day knowledge was so meager that celestial phenomena like a comet or an eclipse of the sun were cause for fear and superstition. But in this modern day, with so much knowledge becoming available, we have only to make sure that we have the skill to communicate that knowledge to the public mind, for it is essential that

the people understand how new discoveries about space may affect their future. Our courses in language arts provide a basis of communicating that knowledge to the public mind.

Approach to truth

The space age gives us also an abundant opportunity to drive home the idea that our concepts change and evolve as new knowledge is discovered. From the beginning of the Christian era down to the 15th century the ideas of an earth-centered universe proposed by Ptolemy persisted and influenced man's thinking. Through the observations of Copernicus, later substantiated by Galileo, the ideas of Ptolemy were proved to be incorrect and a new concept was set forth in which the sun was the center of the solar system.

Thus from Ptolemy, to Copernicus, to Galileo, and on to Newton and Einstein, our understanding of the universe has changed and expanded. Perhaps new discoveries in the future will modify these concepts again.

NATIONAL DEFENSE LANGUAGE INSTITUTES

TEACHERS OF MODERN FOREIGN LANGUAGES in the elementary or secondary schools who plan to spend part of next summer at one of the language institutes financed by the National Defense Education Act will have 30 to 35 institutes to choose from. This should be welcome news: last summer only 12 institutes were held, and the number of teachers applying for admission far exceeded the number that could be accommodated.

Just where and when these institutes will be held, and in what languages, will be announced toward the end of this month, perhaps around Christmastime. After the announcement, a list of the institutes will be available upon request from the Institute Unit of the Language Development Section, Division of Higher Education, Office of Education, Washington 25, D.C.

So far all that can be said is that there will be opportunities for both elementary and secondary school teachers in Spanish, French, and German, as well as for secondary school teachers in Italian and Russian. Anyone in attendance who is preparing to teach in the public schools may receive, for each week of the institute, a stipend of \$75 and an allowance of \$15 for each dependent. Private school teachers, though not eligible for stipends or allowances, may attend the institutes tuition free.

Teachers wishing to attend should start doing something about it as soon as they learn where the institutes will be for there is a deadline on applications—March 1, 1960. Applications should be sent directly to the institute, not to the Office of Education.

Improving the Curriculum and Teaching Through ACTION RESEARCH



By JANE FRANSETH, *specialist, rural education*

WHAT is action research? How does it differ from other kinds of research? What is its function in the curriculum and teaching? Are its findings reliable?

There are no easy or definitive answers to these questions because much depends on the perception and competence of the person undertaking the research and the complexity of the hypotheses being tested. To some extent judgments differ about the need, the feasibility, and the meaning of action research, especially in its relation to teaching and curriculum improvement. Even so, I shall propose some tentative answers.

From my point of view, action research is a systematic examination conducted by individuals or groups studying their own practices in search of sound answers to unresolved problems in their work and aimed at improving their own performance on their own jobs.

Specifically, action research, sometimes called on-the-job research, includes the development of a plan to test a guess, a hunch, or a hypothesis or to find answers to a question; systematic collection of data on what is being done; and analysis of the data to determine the extent to which a guess or hypothesis is correct or a curricular practice is effective. The researchers are the teachers or other educators examining the effectiveness of their own performance.

How does action research differ from other kinds of research? Here

again opinions differ, but I believe the primary differences between action research and other systematic factfinding methods lie mainly in who does it, the place where the testing is done, and the character of the results expected. In action research in education, the researchers are usually teachers, curriculum workers, principals, supervisors, directors of instruction, or others whose main function is to help provide good learning experiences for pupils. The hypotheses or theories are tested by the teacher in the classroom, the consultant in a curriculum study group, or some other educator in a practical situation. If, however, an on-the-job research project is not conducted under carefully controlled conditions, or if it is conducted only in a single classroom, the findings must be applied to other situations with extreme caution.

Suppose, for example, that a teacher wishes to test the theory that providing books on a wide range of reading levels and making them easily available to his pupils increases their interest as well as their reading comprehension. His research might include the following steps: Recording facts about the present situation in the classroom, including the reading ability and interest of each pupil; bringing to the classroom additional books on a wide range of reading levels; keeping records of what his pupils do with the additional books; and periodically checking on their comprehension. At the end of the

project he would examine the records to determine whether his pupils had made progress and, if so, to what extent.

In this example of on-the-job research, the director of research is the teacher, the focus is on what he does to test his theory, and the place of operation is his classroom. The results are the teacher's increased understanding of ways of stimulating his pupils' interest and achievement in reading and the evidence, if any, of their progress.

The steps indicated are typical of on-the-job research conducted by school people examining their own practices, but they are characteristic of other kinds of research, too. Many on-the-job research projects do not require or permit the use of the complicated techniques essential in carefully controlled experimental research. Other action research projects, however, *may* use such techniques. The focus of action research is a systematic study on the job, but the methods need not be limited.

If conditions permit and the problem studied requires more technical research methods, the word "action" itself is not a disqualifying factor. The need, the situation, and the availability of persons with specialized research skills are among the factors that help determine what research methods will be most useful in the improvement of learning for pupils in particular situations. All types of research—basic, pure, applied, or action—have one characteristic in

common: all imply studious inquiry, systematic investigation, and a careful search for truth.

The scientific principles of research are the same for all kinds of research: a problem is defined; a systematic method of collecting, organizing, and analyzing data is adopted; generalizations are made on the basis of the evidence collected; the results are used to guide future action or to improve practice.

There are, however, some kinds of activity labeled research which, in my judgment, do not qualify as research. For example, a teacher may say: "We are experimenting with the use of books on a wide range of levels of difficulty this year. We like it. *We can see that our pupils are making significant gains in reading ability.*"

Even though research findings show that such an effort to provide for a wide range of reading levels can improve reading ability, the teacher's statement offers no evidence that gains were made.

To earn the title "research," the practice must, I believe, use systematic study which includes a—

- ♦ Precise statement of the problem to be solved, the hypothesis to be tested, or the questions to be answered
- ♦ Detailed record of steps taken and observations made during the testing
- ♦ Careful examination of the facts collected
- ♦ Well-considered decision on future action.

A teacher following this procedure in conducting research is likely to increase his skill in using scientific methods in the classroom; in testing scientific theories; in analyzing his problems and finding satisfactory solutions to them; in selecting, organizing, and presenting subject matter to suit the individual needs of his pupils; and in making sound decisions based on evidence he can understand.

Action research to improve the curriculum and teaching is an attempt to narrow the gap between theory and practice. The increasingly com-

plex needs of people for more knowledge, understanding, and skills in a rapidly changing and highly interdependent society make wise decisions about the school program more important than ever. Educators and other citizens recognize that they must have greater understanding of the educative process and greater knowledge of what the schools can do, what they should do, and how they should do it.

Many educators keep themselves as well informed as possible about the findings of scientific research which they think will help them understand the educative process. Such educators have an important role to help teachers find and examine facts most likely to help them provide good learning opportunities for pupils. As many realize, however, an academic knowledge of research does not necessarily mean adequate understanding. If the findings of scientific research are to be of value in helping to accomplish the objectives of the school, means must be found to insure correct interpretation and



widespread application. Unfortunately, misinformation, misinterpretation, and incorrect application of research findings are not uncommon. Let me give you an illustration.

Research findings indicate that a child can learn to read the printed page when he has reached a certain stage of mental and biological maturity and has had the kinds of experiences which help prepare him for learning to read. Research also shows that among children in any age-group there is a wide range of individual differences of many kinds. For example, in the early years there is a wide range of individual differences in reading readiness. Many children, if appropriate opportunities are available, begin to read the printed page between the ages of 6 and 8. Children who mature more

slowly, but not necessarily slow learners, normally begin to read at a later age, but some children mature early and begin to read at 4 or 5.

Some persons have interpreted such findings as meaning that ordinarily reading should not be taught to a class until almost all children in it are ready. Although there is no known method of teaching a child to read before he has reached the necessary stage of maturity for him, neither is there reason to believe that a child should be kept from learning to read when he is ready, and surely no reason for holding a class back until all are ready to learn. Let me also hasten to say, however, that meeting individual differences wisely involves understanding of many complex factors, no one of which should become a single criterion for deciding what to do in helping children make the best use of their abilities.

This single illustration should indicate that teachers who lack knowledge or misinterpret research findings may seriously retard the educational development of their pupils.

All of us, no doubt, know from experience that a teacher's functional understanding of the learning process and the scientific findings on individual differences, let us say, does make an important difference in his ability to teach. Those of us who visit schools and work with curriculum leaders regularly also know that mere academic knowledge of research findings is not enough to make a favorable difference in a teacher's work. Nor is academic success of prospective teachers in studying and interpreting the findings of research enough.

If teachers are to be effective they must acquire accurate and adequate information, recognize its significance, adapt it to their particular needs, and make it a part of their working equipment. In both pre-service and inservice education many effective methods are being used to help teachers acquire knowledge, particularly about human behavior and how children learn; analyze their problems; apply their

knowledge to their own problems; and gain self-confidence in making decisions. One of these ways is through action research.

Corey says of action research: "One of the best ways to enable people to improve their curricular practices is to make it possible for them to study what they are doing, to experiment with ideas that seem to them to be more promising and to get evidence to find out if they are better . . ."¹

Educators in general have come to recognize the function and importance of action research in improving teaching and the curriculum, as a means of bridging the gap between teacher preparation and classroom practice, between the findings of research and beneficial change in the classroom. I believe that many of them have been stimulated to undertake or support action research by the convincing evidence, now mounting, that systematic study and experimentation on the job by teachers and curriculum workers does increase their knowledge of the educative process and help them improve their practices.

School administrators, specialists in teacher preparation, and others are emphasizing that teachers be encouraged to use research methods for a number of reasons, two of which are particularly strong.

1. Classroom teachers are in the best position to test some scientific principles and theories because they know their own and their pupils' needs and because they can weigh the practical results. In education we must continue to depend on research specialists for pure or highly technical research, but if teachers do not accept their findings as valid and use them in the classroom, such findings are not likely to change educational practice, no matter how informative or valuable they are. Like the rest of us, teachers are more firmly convinced by seeing for themselves whether a principle works out well in practice. Moreover, practices that

get good results for one teacher are often picked up and tried by others.

2. There are indications that teachers who use scientific methods in studying their own practices are more likely than others to study the findings of scientific research in an effort to improve their work. Such study in turn increases their knowledge and skill in using scientific methods. As they become better informed, they can pass their knowledge on to others and help correct misinterpretations.

Fortunately, a number of teachers and other educators have for a long time been scientifically studying their own problems, examining the findings of scientific research in the light of their own experience, and thoughtfully testing some of their hunches.

Helen Hinze, a teacher in a small school in Nebraska, is one of that number. Through her knowledge of human growth and development and the learning process and through her own research, she helped Alvin, a so-called problem child, stay in school. She writes of her experience:

. . . Not long ago a "new" family with five children of school age moved into our district. The oldest of them was Alvin, whom I found to be a tall, hungry-looking youth who had failed repeatedly in school. But I was warned about him before I actually got to know him. Mr. Hamilton, the county truant officer, wanting to be helpful, called upon me when he found that Alvin would soon be entering my school. He told me that in the past he had had to go to Alvin's home many times to make him attend school. He asked me to report Alvin's very first absence.

. . . I got Mr. Hamilton to agree that inasmuch as Alvin lacked only 2 months of being 16 when he could legally drop out of school . . . it would be foolish to cause an undue amount of trouble with the family. I requested that Mr. Hamilton not try to force Alvin to attend school if I couldn't make him want to come. Although his previous experience with Alvin made him somewhat hesitant, he agreed.

Alvin and his younger brothers and sisters first appeared at school on a . . . spring morning . . . From [Alvin] came only the abrupt announcement, "In 2 months I'll be 16, then I'm quitting school." . . . I quietly answered, "Alvin, if you don't like it here, you need not come to school after

today. But the other pupils and I will be sorry . . . There are so many things we were hoping you could help us with. We need a good pitcher for our softball team."²

Soon after he enrolled in school, Mrs. Hinze recognized in Alvin some strong feelings of inadequacy, and she found little evidence that he had ever succeeded in doing the things expected of him. Based on her understanding of facts about learning, an hypothesis formed in her mind: If she could help him feel successful, he might remain in school.

To test her hypothesis, Mrs. Hinze found a number of ways of helping Alvin; for example, she encouraged him to play baseball and to take pride in his success, and she assigned work to him she thought he could handle.

Soon he began making progress; he stayed in school for the rest of the year, passed his eighth-grade examinations, received an eighth-grade diploma, and returned in the fall.

Mrs. Hinze had satisfactorily tested her hypothesis, and the other pupils as well as Alvin benefited by her knowledge and willingness to experiment.

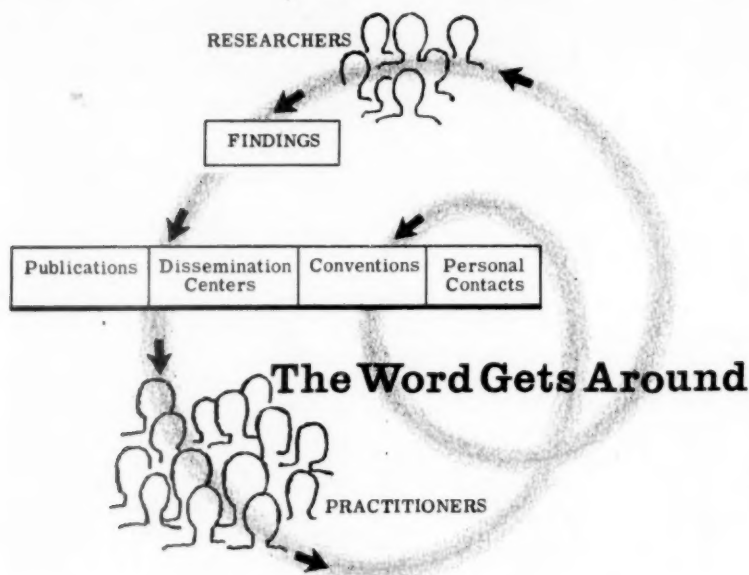
Through similar action and with limited resources other teachers are becoming better teachers. They are learning to test for themselves and to more effectively and wisely use the findings of scientific research on such matters as the biology of the human organism, the chemistry of the body, and how children learn.

All day and every day, teachers make decisions that affect what and how children learn. We should assume that the quality of their decisions improves as they discover for themselves better ways of working and of finding sound answers to their questions about the educative process. The main function of action or on-the-job research in the school is to help educators improve curriculum and teaching by systematically examining and evaluating their own work in helping children learn.

¹Stephen M. Corey, "Curriculum Research," *Educational Leadership*, Vol. XI, No. 8, May 1954, p. 464.

²Helen Hinze, "Helping Alvin Stay in School," *Rural Service Teaching Brief*, Series 1, No. 1, Washington, D.C., Department of Rural Education, NEA.

From researchers to practitioners . . . and back again



HOW DOES the practicing educator learn of the findings of the educational researcher in his laboratory?

And how does the researcher hear of the questions and problems that plague the practitioner in his school?

The same channels of information that can carry research findings to the practitioner can also carry the word about the practitioner's needs to the researcher. The Office of Education, which for 4 years now has been administering the Federal Government's cooperative research program in education (inaugurated by the 83d Congress, Public Law 531), looks to several of these channels to keep ideas moving back and forth and to make the search for knowledge a continuous process shared by practitioner and researcher alike.

1. PUBLICATIONS

Professional journals carry the reports of researchers under the Office program; they carry also the practi-

tioner's point of view. Together they make a channel that runs both ways provided researchers and practitioners do a little reading in each other's journals.

A final report is available on each completed project from the university or State department of education that sponsored the research. Copies of these reports are distributed to major libraries across the country.

Two series of monographs will be published by the Office of Education, beginning early in 1960. Monographs in the basic series will summarize the actual final reports from individual research studies. Those in the supplementary series will be "block" presentations, each synthesizing the findings from a number of studies on one particular subject, such as pupil retention, pupil achievement, or mental retardation; projects within each block complement each other so as to suggest not only directions for future research but also some imme-

diately answers to practitioners' problems. At least 6 monographs will be published by the end of this fiscal year.

School Life from month to month announces final reports and publishes summary articles on selected projects or groups of projects.

2. DISSEMINATION CENTERS

The Office has recently initiated an experiment in communication between researchers and practitioners which, if successful, may ultimately be extended to include hundreds of colleges and universities and thousands of local school districts. For the present it is confined to Harvard University and the New York State University College of Education at Albany, N.Y., and their environs. Through the departments of education at these institutions, which already have close working relations with nearby school districts, results from the Office's cooperative research program will be channeled directly to practitioners. The colleges are developing instruments to measure the effect of this pattern of dissemination on the participating schools.

3. CONVENTIONS

At all kinds of conventions and conferences, researchers are reporting to practitioners, and practitioners are responding with questions and suggestions.

4. PERSONAL CONTACTS

Specialists in the Office of Education, as they consult with school administrators, teachers, supervisors, and other practitioners from all parts of the country, share their knowledge about research findings and learn of practical needs and problems of practitioners in the schools.

SCHOOL ADMINISTRATORS are invited to visit the Office of Education exhibit at the AASA Convention, Atlantic City, February 13-17 (booths 27 and 29).



RESIDENTS of Butte County, Calif., were so pleased by a bookmobile loaned by the State as a sample that they voted to make it their own.



SERVICE AT THE WATER'S EDGE for three young Louisianans typifies the willing ways of the library extension program. Right, two residents of a port community in the State of Washington enjoy some parting words with the librarian of their bookmobile.



"FOOD FOR THE MIND and food for the body" would be a fit slogan for the many grocery stores that accommodate public library stations. Right, a small Georgian gets the professional advice that makes his bookmobile "just as good as a city boy's library."



NO AGE LIMIT mars the intentions of library extension programs. Here, in a Michigan bookmobile, bright eyes and dim scan the pages.

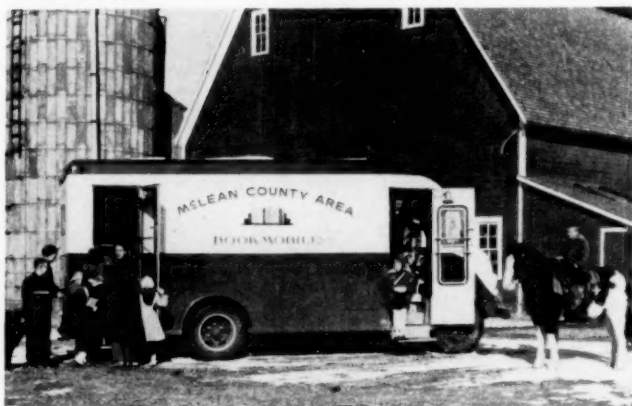
BOOKS, USA

FROM ALASKA to Puerto Rico, from California to New England, the Library Services Act, now halfway into its fourth year, is making itself well felt in the rural areas of 52 States and Territories. It has brought public library services to 1 million Americans who previously had none at all, and has improved library services for 29 million others. More than 1,200 counties have benefited; at least 65 of these did not have public library services before.

By the end of the first 3 years of the Act, Congress had appropriated \$13,050,000. For the fourth year, 1959-60, the amount authorized for allotment is \$7,500,000. Thanks to LSA funds, Federal and matching, 200 more bookmobiles are now plying country roads, more than 5 million more books have been bought, and other library improvements have been made in staff, equipment, and materials. But the extension of public library services still has far to go: 25 million people are still doing without; 46 million are still making do with very little.



LEAVING SOMETHING GOOD BEHIND until next time, the librarian of a Rhode Island bookmobile waves goodbye to two of his junior customers, who jointly clutch their treasure. Below, farmyards are occasional stops in the sparsely settled areas of North Dakota. Mrs. Dorothea Welk, the librarian of this bookmobile, which serves both McLean and Mercer Counties, reports a common problem—a demand for books and services that far exceeds the supply.



JUST OUTSIDE the bookmobile, in Puerto Rico (above) and Georgia (lower left), the story hour begins. Upper left, a mission out in the desert has become a stopping place for the bookmobile of the New Mexico State Library Commission.

Independent School Districts

Decrease and Increase

By WALTER H. GAUMNITZ, *head, Rural Statistics Unit*

MY TITLE is no idle contradictory play on words. Independent school districts, that is the local districts governed by local school boards, are in truth decreasing and increasing the Nation over. In total number they are decreasing; in size and number of pupils each serves they are increasing. My purpose in this article is to examine these two contradictory movements statistically.

The word "independent" has more than passing significance here, for my analysis is concerned only with the independent units of school government through which the vast majority of schools in the United States are administered. School systems primarily dependent on or controlled by units of civil government such as States, counties, or municipalities are not included. (In 1952 there were 2,409 such "dependent" school systems with a total enrollment of 6,138,000 pupils; in 1957 there were 2,467 with 7,467,200 pupils; in both years fewer than 5 percent of the school systems and about 24 percent of the pupils were omitted from the tabulations.)

The history of the small independent school unit dates back to the very beginning of public education. Early in our history it became an important means of taking the rudiments of public education to country cross-roads and to isolated rural communities. But the small district also became associated with some of the most baffling problems with which school administrators had to contend—how to broaden the tax base, how to increase the offerings sufficiently to keep pace with the growing complexity of society, and how to

shift school government from the control of local school meetings with everyone participating to a representative but more remote means of community expression.

For many years now the number of independent school districts has

been decreasing. Bureau of Census data¹ show a reduction of 53.5 percent in the total number in the 15-year period, 1942 to 1957: From 108,579 in 1942 to 67,346 in 1952,

¹ Governments in the United States, Vol. I, No. 1, p. 1. 1957.

Table 1.—Independent¹ school districts: Decreases and increases, 1952 to 1957

Enrollment size	School districts					
	1952 ²		1957 ²		Changes in	
	Number	Percent	Number	Percent	Number	Percent
United States total . . .	67,346	100.0	50,440	100.0	-16,906	-25.1
Fewer than 50	44,393	65.9	30,312	60.0	-14,081	-31.7
50-150	7,902	11.7	5,903	11.7	-1,999	-25.3
150-300	5,047	7.5	3,883	7.7	-1,164	-23.1
300-600 ³	5,379	8.0	3,745	7.4	-1,634	-30.4
600-1,200 ³	2,294	3.4	2,861	5.7	567	24.7
1,200-3,000 ³	1,300	1.9	2,305	4.6	1,005	77.3
3,000-6,000	611	.9	858	1.7	247	40.4
6,000-12,000	265	.4	383	.8	118	44.5
12,000-25,000	97	.1	112	.2	15	15.5
25,000 or more	58	.1	78	.2	20	34.5
Less than 600	62,721	93.1	43,843	86.9	-18,878	-30.1
More than 600	4,625	6.9	6,597	13.1	1,972	42.6

¹ Local districts are those classified by the Bureau of the Census as "independent." Data omit "dependent" school districts or systems (2,409 in 1952 and 2,467 in 1957) operated as part of State, county, municipal, town, and university governments rather than by local school board.

² Means school year ending in 1952 and 1957. For States unable to supply facts for the the school year 1951-52, data for 1949-50 and 1950-51 were used.

³ Size groupings between 300 and 3,000 used here are those given for 1957. The 1952 study used: 300-750, 750-1,500 and 1,500-3,000. The data available for 1952 in the 300-600 and 600-1,200 brackets, therefore, should be slightly larger than those given, and those in the 1,200-3,000 bracket slightly smaller.

NOTE: Because of rounding, percentages may not add to totals.

SOURCE: Bureau of the Census, Governments in the United States in 1952—State and Local Government, Special Studies: No. 31, 1953, and Governments in the United States, Vol. I, No. 1, 1957.

to 50,440 in the school year 1956-57.²

This development was not accomplished as simply as the reading of the statistics might suggest. The small rural school district has deep roots in our system of school government. Since it was early recognized that a unique scheme was needed to provide public education to families living on the frontier, small districts were formed in all parts of the country, especially in rural areas. As the country grew larger, the number of such small districts multiplied rapidly.

² The data were collected during October 1956.

Although the fathers of the American school system developed the local school system as a democratic means of bringing educational opportunities to isolated farm people, they early recognized that great over-decentralization had its faults. Even so, some of the small districts were retained long after many school men had recognized that the larger districts were more efficient, if not always more effective.

Horace Mann, who had promoted the local district in Massachusetts as a means of bringing public education within the reach of every child, called the State law of 1789 originally creating it "the most unfortunate

law on the subject of common schools ever enacted by the State of Massachusetts."³ And in 1835 General John A. Dix, New York State superintendent of schools, summarized the multiplication of the small rural school districts as follows:

"Almost all of the existing evils of the common school system have their origin in the limited means of the school district. The tendency is to subdivision and to contract their territorial boundaries . . . In feeble districts cheap instructors, poor and ill furnished school houses, and a general languor of the cause of education are almost certain to be found."⁴

Thus, from the beginning of our public school system there have been two opposing forces in the creation and continuation of the local school district. One force, determined to bring public education to every boy and girl however isolated, organized more and more such districts; the other, seeing the possibilities of larger schools in doing a better job, tried to curb their smallness, to consolidate several small districts into larger ones, and to centralize school administration into larger units, some of them covering an entire county.

Until recently the number of small districts remained almost constant. Although new frontier communities organized some small districts, other communities built good roads, became urbanized, and eliminated the small districts through consolidation. Thus for many years the number of large districts gained slowly over the smaller. The situation is now changing; the number of larger districts is gaining rapidly. (See table 1.)

The table shows that the small districts decreased the fastest. Of the 67,346 independent school districts in 1952, as many as 44,393, or 65.9 per-

Table 2.—Pupils enrolled in independent¹ school districts, 1952 to 1957

Enrollment size	Enrollments					
	1952 ²		1957 ²		Changes in	
	Number	Percent	Number	Percent	Number	Percent
United States total.	20,240,000	100.0	23,972,800	100.0	3,732,800	18.4
Fewer than 50.....	625,000	3.1	411,300	1.7	-213,700	-34.2
50-150.....	704,000	3.5	531,000	2.2	-173,000	-24.6
150-300.....	1,093,000	5.4	842,600	3.5	-250,400	-22.9
300-600 ³	2,541,000	12.6	1,605,800	6.7	-935,200	-36.8
600-1,200 ³	2,417,000	11.9	2,411,700	10.1	-5,300	-0.2
1,200-3,000 ³	2,711,000	13.4	4,317,500	18.0	1,606,500	59.3
3,000-6,000.....	2,568,000	12.7	3,542,700	14.8	974,700	37.9
6,000-12,000.....	2,091,000	10.3	3,163,400	13.2	1,072,400	51.3
12,000-25,000.....	1,638,000	8.1	1,842,200	7.7	204,200	12.5
25,000 or more.....	3,852,000	19.0	5,304,600	22.1	1,452,600	37.7
Less than 600.....	4,963,000	24.5	3,390,700	14.1	-1,573,000	-31.7
More than 600.....	15,277,000	75.5	20,582,100	85.9	5,305,100	34.7

¹ Local districts are those classified by the Bureau of the Census as "independent." Data omit "dependent" school districts or systems (enrolling 6,138,000 pupils in 1952 and 7,467,200 in 1957) operated as part of State, county, municipal, town, and university governments rather than by local school board.

² Means school year ending in 1952 and 1957. For States unable to supply facts for the school year 1951-52, data for 1949-50 and 1950-51 were used.

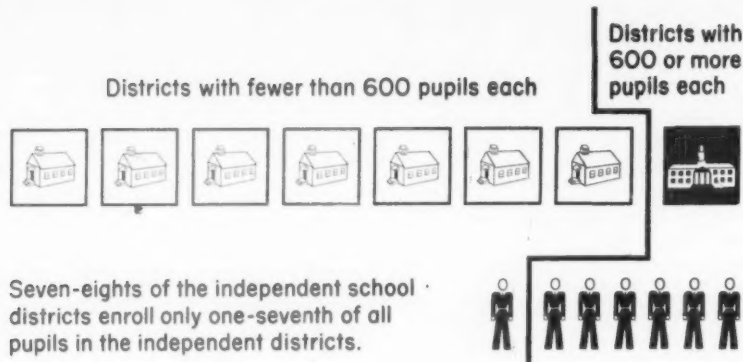
³ Size groupings between 300 and 3,000 used here are those given for 1957. The 1952 study used: 300-750, 750-1,500, and 1,500-3,000. The data available for 1952 in the 300-600 and 600-1,200 brackets, therefore, should be slightly larger, and those in the 1,200-3,000 bracket slightly smaller than those given.

NOTE: Because of rounding, percentages may not add to totals shown.

SOURCE: Bureau of the Census, Governments in the United States in 1952—State and Local Government, Special Studies: No. 31, 1953, and Governments in the United States, Vol. I, No. 1, 1957.

³ Webster, William C. Recent centralizing tendencies in State educational administration. New York, Columbia University, 1897, p. 23.

⁴ Randall, S. S. A digest of the common-school system of New York with forms, instructions, and decisions of the superintendent. Albany, N.Y., 1844, p. 105.



cent, enrolled fewer than 50 pupils each; by 1957 the total number of districts had been reduced to 50,440, a decrease of 16,906, or 25.1 percent, but the number of districts with fewer than 50 pupils each had decreased by 14,031, or 31.7 percent. The next three categories show percentage reductions of 25.3, and 23.1, and 30.4.

Unfortunately for my analysis the categories used in reporting on districts enrolling between 300 and 3,000 pupils are not the same size for 1957 as for 1952 (see footnote 3, tables 1 and 2). There seems, however, to be enough similarity between them to warrant their use in a general comparison.

The break between the enrollment categories which show decreases in the number of districts and those which show increases apparently falls at about 600 (see table 1). By dividing the total range into two groups by size, I found that in 1952, 93.1 percent of the independent school districts were smaller than 600 and only 6.9 percent were larger than that; by 1957 the percentage for the smaller districts had decreased to 36.9 and that for the larger had almost doubled. The number of local school districts smaller than 600 decreased by 18,878, or 30.1 percent from 1952 to 1957; that of the districts larger than 600 increased by 1,972, or 42.6 percent for the 5-year period.

There has also been an increase in the number of square miles of land area in the average school district.

On the assumption that all land area is in one school district or another and that the total land area does not greatly change from year to year, the average school district covered 42.6 square miles in 1952 and 56.2 square miles in 1957, an increase of nearly 30 percent.

By summarizing the data in the two tables it may be seen that the many smaller school districts serve comparatively few pupils and the few larger districts the many. For example, in 1957 the 36.9 percent of all local independent school districts were smaller than 600 but they served

only 14.1 percent of the pupils; the remaining 13.1 percent of the districts were larger than 600 but they served 85.9 percent of all the pupils.

Although the total number of independent school districts decreased by 16,906 during the 5-year period, the total number of pupils enrolled in such districts increased by 3,732,800, or 13.4 percent (see table 2). Districts enrolling fewer than 600 pupils showed marked reductions in number of pupils served; those with fewer than 50 pupils a reduction of 34.2 percent.

Districts in nearly all categories larger than 600 showed increases in number of pupils; those in the 1,200 to 3,000 category served 1,606,500 or 59.3 percent more pupils in 1957 than in 1952. By dividing the smaller and larger districts into two groups, I found that in 1957 there were 1,573,000 fewer pupils in districts smaller than 600 than in 1952, a decrease of 31.7 percent, and 5,305,100 more pupils in districts larger than 600, an increase of 34.7 percent.

The recent decreases in the number of smaller districts and the increases in the number of pupils served by the larger ones are obviously caused by (1) the dissolving of smaller districts and the forming of larger ones, and (2) the continuing shift of the rural population into the urban and suburban centers. The statistics available do not show with exactness the effects of either but that of the former seems to be much the greater. Nor do the statistics available show which of the smaller, disappearing districts were located in rural areas and which of the new larger ones were in urban areas. It is known, however, that the number of one-teacher schools was reduced by more than 25,000 between 1952 and 1958 and that most of those discontinued served the smallest type of school district, nearly all in the open country. Many of the small school districts were consolidated with each other, but some were joined with school systems in town and villages to form districts of 600 or more pupils.

In recent years persons or groups pressing for the reorganization of the

OFFICE OF EDUCATION PUBLICATIONS ON SMALL SCHOOL DISTRICTS AND SMALL SCHOOLS

Statistics of Local School Systems: 1955-56, Rural Counties, Chap. 3, Sec. 4, Biennial Survey of Education in the United States—1954-56 (60 cents)

Statistics of Public School Systems in 101 of the Most Rural Counties, 1955-56, Cir. 529 (20 cents)

Statistics of Rural Schools, A U.S. Summary, 1955-56, Cir. 565 (20 cents)

Selected Indexes of Rural School Finance in the United States, 1955-56, Cir. 566 (20 cents)

Small Schools Are Growing Larger—A Statistical Appraisal, Cir. 601 (in press)

smaller districts have advocated that local districts enroll a minimum of 1,200 or 1,500 pupils in grades 1-12. Such pressure probably explains why more larger districts are being formed and why many of them are rural-urban in character, rather than purely

rural or purely urban. Indeed, there is a trend toward making the entire county into a single school district or unit of school administration. In sparsely settled areas the county unit may be the only way in which such large districts can be established.

If the past 5 years is an indication of the future, school districts will continue to change in size and number of pupils enrolled. Many small local school districts will disappear, and even more pupils will be served by the larger units of school administration.

Equalizing Educational Opportunities: The NEXT STEP

By ORLANDO F. FURNO, specialist, State school finance systems

AMERICANS have always held schools dear to their hearts. Public opinion has brought many improvements to education over the years: The time of formal education has been extended from a few years to almost two decades, reaching from kindergarten to the graduate school; standards for teacher preparation have been raised; and educational opportunities have been so increased in character and depth that the gifted, the average, and the less capable all have better chances than ever before of living effectively in society.

WASTE OF TALENTS

But despite the trend toward improving educational opportunities for all children, the quality of education children are receiving today ranges from poor to excellent. Despite the principle of equalization of educational opportunity for all children,¹ the waste of human talents and abilities in many schools continues.

The public schools have long been castigated on this score. But criticizing the public schools is not new: ever since they were first established they have been under attack. Almost

every major study on the status of American education, no matter when it was made, reports neglect and lack of educational opportunity. Study after study tells the same familiar story of crises in education, of teachers poorly paid and poorly trained, of teachers inadequate in number and lacking instructional materials, of poor communities struggling to pay mounting school expenses, of classroom shortages, and of limited opportunities for learning.

Even a brief look at a few recent studies gives evidence of today's criticism of the schools.

The "Rockefeller Report" on Education, *The Pursuit of Excellence*, says that many of our schools are "overcrowded, understaffed, and ill-equipped."

The Educational Policies Commission, in its booklet *The Contemporary Challenge to American Education*, emphasizes that ways must be found to improve the educational program in schools where educational deficiencies exist because of lack of support, lack of public understanding, lack of proper school district organization, or lack of professional leadership.

Norton and Lawler, in a study entitled *Unfinished Business in American Education*, state that public schools are not providing equal opportunities for all children. Having found great variations in the quality

of educational programs, they consider equal educational opportunities for all children to be a myth.

Mort and his students, in *Administration for Adaptability*, report that great differences in educational opportunities exist even among schools with the highest costs in the country.

These are only a few of the studies that vividly point out the continuing waste of human talents through lack of educational opportunities.

REASON FOR FAILURE

There never has been equality of educational opportunity in the United States; and under the present financial support plans for education, there apparently never will be.

To begin with, when States were divided into school taxing districts, some districts found themselves with less wealth than others. The ability to support schools became an accident of the distribution of children and wealth. Some school districts, left to their own resources, found it impossible to even hope to equalize educational opportunities for all children.

Moreover, the providing of education on a local school district basis necessarily limited local communities by the tax system available to them.

It was only logical that the States should assist the local communities in supporting education. The reward-for-effort and the doles-to-the-needy

¹The term "equalization of educational opportunity" is used here in the specialized sense of raising opportunities—and not in the dictionary sense of "evening up" opportunities by "raising some and lowering others."

approach epitomized by Cubberley in the early 1900's magnified rather than equalized educational opportunities for all children. So did the Strayer and Haig proposal in the early 1920's, despite the fact that it specifically called for the equalization of educational opportunities and the equalization of tax burden. Both these approaches increased educational opportunities but did not equalize them.

In the Cubberley approach we have an emphasis on reward-for-effort, which was a boon to pioneer light-house schools; in the Strayer and Haig approach, we have an emphasis on raising educational opportunities but from the bottom up to a certain minimum level.

The minimum level, or foundation program, as it is generally alluded to, is different in each State. These differences in level themselves result in tremendous variation in the quality of educational programs. The financing of education under the present decentralized systems can never accomplish the equalization of educational opportunities for all children. Clearly the inability to do so can be attributed to the financial support plans that focus on equalizing educational opportunities within each State up to a minimum level rather than within the whole Nation.

But even if each State could equalize educational opportunities up to the same minimum, tremendous inequalities would still exist. The very fact that only a minimum program of education is equalized leaves communities with adequate revenue sources free to give their children educational opportunities far beyond those of less fortunate communities. Also, present financial support programs equalize only units of expenditures (and, in some instances, units of tax burden) and not educational programs. It's true of course that educational opportunities bear a strong relationship to cost, but no serious researcher of the cost-quality relationship has found it to be perfect. Forces other than cost affect school quality, too; in fact expendi-

tures alone determine only about 40 percent of it. Besides, a school dollar in one State or local unit does not purchase the equivalent amount of education it does in another State or unit—a fact that underscores another shortcoming in the attempts to equalize educational opportunity by equalizing units of expenditures.

THE NATION'S NEEDS

Because explosive changes in scientific technology have resulted in an increasingly complex world social organization, the waste of human talents and abilities is a luxury the United States can no longer afford. The tasks that society must perform to continue functioning are not only growing ever more intricate and demanding, but constantly changing in character and scope. To perform these tasks requires more highly trained, competent people than the Nation has ever needed before. The implications of this demand for manpower for the Nation's survival are becoming self-evident; and the strategic importance of education as the one means of satisfying this demand is becoming apparent to all.

Another reason we can no longer afford the luxury of wasting human talents and abilities is that now the national demands on education run deeper than ever before. Since we are engaged in a technological race for survival, our educational system must do more than discover and educate the relatively few people who are creative. The need for providing excellent education for the gifted will always be with us, but modern society cannot be sustained by the gifted alone. Our educational system must train the large numbers of persons capable of operating the great economic mechanism that is one of the frameworks of the American way of life. Seeking out a few highly gifted individuals will not supply the mounting needs of the American economy for skilled and professional workers, which now constitute about half of all workers, and the almost as large

number of semiskilled workers. America cannot long survive unless it provides advanced high-quality education for more and more persons in the middle range of intellectual ability.

A CHANGE IN PHILOSOPHY

When the Soviet Union hurled the earth's first manmade satellite into outer space, the American people were startled into a great interest in education. Out of this interest, the Congress enacted the National Defense Education Act of 1958. This Act provides for loans and fellowships to students and for financial aid to States to improve instruction, especially in mathematics and the sciences.

The deepened national interest in education has caused many persons and organizations to reexamine the financial underpinnings of education. They have found them sadly wanting for the job that lies ahead. From these financial assessments has emerged what seems to be a change in philosophy about achieving equality of educational opportunities.

Despite this change in philosophy, the equalization of educational opportunities for all has remained a goal. In fact, it has assumed even greater importance, because now the needs not only of the individual but of all society impinge on this goal. What the change has brought is the realization that increasing educational opportunities through a foundation program established at a relatively low level is not the answer; that the answer lies in a much bolder approach—*providing each child in the Nation educational opportunities of such depth and scope that he can develop his potential to the fullest*. Viewed in this light, the goal of equal educational opportunities for all—an ideal America has long held—emerges as an economic and political necessity.

This shift in philosophy has far-reaching meaning for the financial support of education. What remains

to be solved is a number of great questions: How should a program of education assuring each child equality of educational opportunity be designed to maximize each child's potential? How should it be financed? How can national concern and interest be assured and yet State and local control of education retained?

Too many schools are trying to equalize educational opportunities by popular but essentially ineffective measures. Some schools put children of low ability in one group and children of high ability in another, and leave all the rest, perhaps 80 to 90 percent of their pupils, to mass production procedures. Yet this middle group possesses the very abilities and talents whose development is vital to American survival and prosperity.

Equal opportunity in the new sense will come closer to realization if our efforts succeed in meeting these educational needs: (1) Enough people to do the job, (2) professional staff with the training and competence needed for educating all children, (3) sufficient teaching materials, in far greater variety than is required by mass production schools, and (4) maximum, not minimum, educational programs, in which no child anywhere is deprived of educational opportunities afforded to any other child. This does not mean a uniform program for each child, but an equal chance for each child to develop to the fullest.

Since the national demands on education are felt throughout the Nation, citizens of one State have a justifiable concern for equalizing educational opportunities for all children in all States. Today very few persons remain in the same State all their lives, much less in the same school district. In 1958 approximately 31 million Americans changed residence, and over 5 million moved from one State to another. The mobility of our population shows us how long overdue is the equalization of educational opportunities in terms of units of educational program rather than in terms of units of expenditures.

It all adds up to this: the approach we have tried has not succeeded.

The approach through a minimum educational program rather than a maximum, through units of expenditure level rather than units of program capacity—all this has hit wide of the mark in making equality of educational opportunity a reality.

But we cannot afford to miss again. If our next effort to equalize educational opportunities for all children is to succeed, we must reexamine with care the roles of the Federal Government, the States, and the local school districts in financing education.

Statistic of the Month

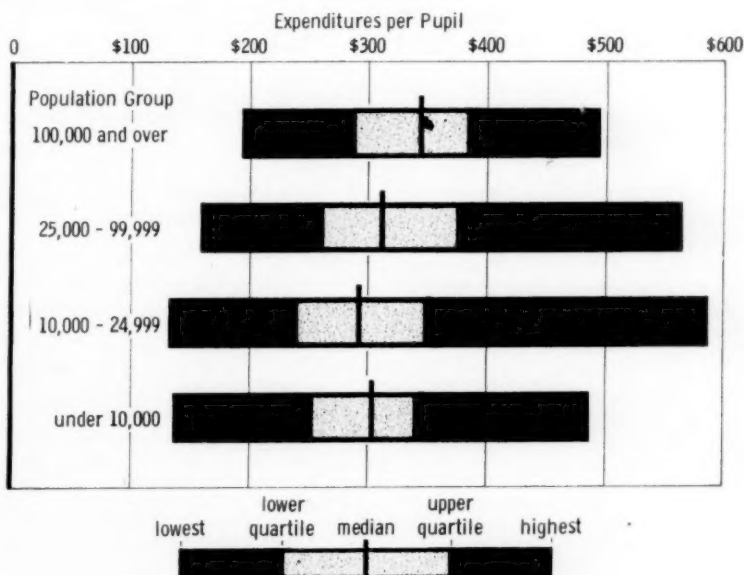
Current Expenditures in Urban School Districts

URBAN SCHOOL districts vary widely in their current expenditures per pupil in average daily attendance: In 1957-58 the lowest amount was \$133 and the highest was \$586. The median expenditure of all districts, subdivided into 4 groups on the basis of the 1950 population of the cities they served, range¹ from \$292 to \$344.

These figures are from the Office of Education's most recent annual survey of expenditures: "Current Expenditures Per Pupil in Public School

Systems: Urban School Systems, 1957-58" (Circular No. 595, OE-22000). The new survey presents information by expenditure account, by region, and by city, using the definitions and systems of accounting recommended by *Handbook II, Financial Accounting for Local and State School Systems* (Office of Education Bulletin 1957, No. 4).

Copies of the circular are on sale from the Superintendent of Documents, the Government Printing Office, Washington 25, D.C., at 45 cents each.



The Competition for Teachers

*Are schools competing with colleges and universities
as well as with industry?*

KEN AUGUST BRUNNER
*specialist, associate degree
and related programs*

CLARENCE B. LINDQUIST
*chief, natural sciences
and mathematics*

IN THE FALL of 1959, when public and private schools opened their doors to about 43 million boys and girls, they faced an estimated shortage of 195,000 qualified classroom teachers. The turnover rate promises to be even higher than we thought it to be (current Office of Education data indicate that 10.9 percent is closer to the truth than the old 7.5 percent); and at the new rate 152,700 qualified teachers left their classrooms this year, more than offsetting the gain of 97,000 new teachers—all in the face of an increased enrollment of 1,750,000.

What is the outlook for the future? A recent Office of Education survey¹ suggests that staffing problems in elementary and secondary schools are affected by staffing practices in colleges and universities—that the shortage at the lower levels may become more severe as the competition for teachers grows heavier.

To find out how the colleges and universities were dealing with their staffing problems, the Office in May 1958 asked 1,940 college and university presidents whether their institutions followed any of 21 practices listed in the questionnaire the Office submitted. The questionnaire also invited comment on staffing problems and the methods used in handling them.

¹ *College and University Faculties: Recent Personnel and Instructional Practices*, by Clarence B. Lindquist. Bulletin 1959, No. 27 (Washington, U.S. Government Printing Office).

Remarks by college presidents

Of the 1,610 presidents who responded, a number said that they were solving some of their recruitment problems by employing qualified teachers from the high schools. The remarks below, extracted from their



responses, may well give pause to the Nation's elementary and secondary school administrators.

We are able to get most of our faculty from high school teachers who have M.A. degrees. (From the dean of a junior college in a Northern Great Plains State.)

One of the ways we have met faculty needs in the junior college is by recognizing outstanding ability and superior preparation of secondary school teachers who may be interested in working with older young people. (From an administrator of a junior college in a Middle Atlantic State.)

Outstanding high school teachers with extraordinarily strong subject-matter back-

grounds [have been] secured to replace or add to our staff rather than people with graduate degrees but little or no classroom experience. (From the president of a Midwestern professional school.)

Being part of a city system in which we have several schools under the same board of education, we have from time to time taken outstanding people from these faculties and brought them to the college. (From the president of a California junior college.)

Additional staff members can generally be secured by transferring them from other units of the large public school system to which our institution belongs. (From the president of a teachers college in the Midwest.)

Teacher recruitment practice

To be sure, these are isolated comments, but they may have meaning to school administrators concerned with teacher recruiting and retention practices.

As long as there have been colleges and schools in our country there has been a certain amount of interinstitutional transfer of teachers. College professors with fading interest in research and increasing desire to use their teaching abilities more fully have moved to secondary and elementary schools. In turn, secondary and elementary teachers interested in research have moved to college and university staffs. Furthermore, many employing officials, especially in teacher-training institutions and junior colleges, have looked with favor

on applicants with teaching experience at the secondary level in the belief that such experience is valuable in articulating precollege and college programs.

In recent years, all types of colleges and universities have been emphasizing the classroom teaching function of their professors. Salary schedules have been revised to take teaching into consideration along with the traditional assets of advanced degrees and published research. As a result, school teachers who previously declined college professorships because of the research emphasis have reconsidered and taken college positions.

What may be of even more concern to elementary and secondary school administrators is the accumulating evidence that shortages of college teachers are growing, especially in science and mathematics.

What are the implications of these shortages, particularly for the high schools which are already handicapped by a shortage of science and mathematics teachers? Might not the transfer of increasing numbers of high school science and mathematics teachers to colleges aggravate even more the struggle to provide quality education in these and other vital subjects in the public schools? It is well to look into the matter further.

Facts basic to the problem

It is well known that the senior colleges have always sought to have a fairly large percentage of their faculties made up of teachers with doctor's degrees. Junior colleges have commonly regarded the master's degree in a subject-matter field as sufficient professional qualification for teaching, but they have likewise welcomed holders of doctorates. In spite of expanding college enrollments and the demand for highly trained professional manpower in all segments of our expanding economy, the number of persons annually earning doctorates has not changed much in the United States in recent years.

These are the figures for the total number of doctorates conferred annually, 1952-53 to 1957-58:¹

1952-53	8,309
1953-54	8,996
1954-55	8,840
1955-56	8,903
1956-57	8,756
1957-58	8,942

As a result, colleges and universities have had to settle for less than Ph. D. degrees in recruiting new faculty members. The teacher supply and demand studies conducted by the National Education Association show that for several years the percentage of new teachers entering college teaching with doctoral degrees has been declining steadily. The table below shows the number of new college teachers by academic level.

During the same period, while colleges and universities were being forced to lower their academic sights, the Nation's high schools and elementary schools were raising theirs. In 1957, 37 States required the bachelor's degree for regular certification of beginning elementary teachers; in

1959, 40 States; in 1960, the total will rise to 42. By 1960, all States will require a bachelor's degree for regular certification for new secondary school teachers.

High school certification standards are even higher in some States; for example, California, Arizona, and the District of Columbia require a fifth year of preparation; Connecticut, New York, Washington, Indiana, and Oregon require the completion of the fifth year of preparation within a specified period after beginning teaching. These increased certification requirements are, according to Guy A. Curry, Jr., of the National Commission on Teacher Education and Professional Standards, the result of a concerted effort since World War II to upgrade the teaching profession by correcting the weaknesses which had become apparent in teacher certification regulations of State education agencies.

The raising of certification standards does not by any means reveal the complete picture of efforts being made to improve the teaching profession. Many States, during the post World War II period, changed the method by which they allocated funds to local school districts. The amount of State aid is now regularly tied to the educational preparation

¹ Earned Degrees Conferred by Higher Educational Institutions 1957-58, Cir. 570, U.S. Department of Health, Education, and Welfare (Washington, U.S. Government Printing Office, 1959), p. 1.

Beginning college teachers, by levels of academic training, 1953-54 to 1958-59

Year	Percent with doctor's degree	Percent with master's degree plus at least 1 year of graduate study	Percent with master's degree	Percent with less than master's degree
1953-54.....	31.4	18.2	32.2	18.2
1954-55.....	28.4	18.7	33.6	19.3
1955-56.....	26.7	17.8	35.4	20.1
1956-57.....	23.5	18.1	35.3	23.1
1957-58.....	25.3	16.2	36.7	21.8
1958-59.....	23.8	18.7	36.7	20.8

Source: Research Report, *Teacher Supply and Demand in Universities, Colleges, and Junior Colleges, 1957-58 and 1958-59*, National Education Association, Washington, June 1959, p. 11.

of the teacher. The basic allotment for regularly certified teachers is now commonly supplemented by additional amounts for teachers with master's degrees. This supplement has made it possible for local school districts to pay higher salaries to teachers with master's degrees. As this has occurred, a dramatic surge has followed: many regularly employed teachers have gone back to college to earn the master's degree which will qualify them for higher pay.

It is conceivable that many teachers taking part in this bootstrap operation are considering other career possibilities. They may find college teaching more appealing as colleges and universities are reflecting their desire and ability to provide as attractive an environment for the master teacher as for the research-oriented faculty member. Furthermore, salaries of college teachers have always been potentially higher than those of public school teachers.

It is in order, then, to take a look at recently reported data on transfer of public school teachers to college faculties.

The schools as sources of new teachers

According to NEA research reports, the largest source of supply of new college teachers, next to persons who have just obtained degrees from the graduate institutions, is secondary and elementary school teachers. In 1955-56 and in 1956-57, 810 institutions of higher education reported that they had employed 1,964 new teachers directly from the high schools and 192 from the elementary schools. In 1957-58 and in 1958-59, 911 institutions reported hiring 2,094 teachers from high schools and 377 from the elementary schools.

Since the NEA data cover only 810 and 911 colleges and universities of the 1,940 institutions in the United States, it is reasonable to assume that during these 2-year periods between

4,000 and 5,000 teachers in the schools moved into college teaching positions. Since some of the best teachers were undoubtedly among those who transferred, the loss of such a sizable number of secondary and elementary school teachers is bound to accentuate the shortages of good teachers at these already existing levels.

Comments by schoolmen

While preparing this article, the authors asked several school superintendents whether they were losing any great number of teachers to college faculties. None said they were. Nor were they willing to say they were aware of any trend toward such losses. Yet a recent issue of *Junior College Newsletter* reports that California alone will need almost 15,000 new junior college teachers by 1970 and that more than 3 of every 4 instructors recently employed by junior colleges had been employed as teachers. Although some had come from 4-year colleges and universities, the majority had taught in high schools and elementary schools.



These figures agree with a study by F. H. Dolan² which reports that 70 percent of the junior college teachers across the Nation have come from high schools. This may mean only that the high school teacher prefers to be associated with a collegiate type of institution, or that he believes colleges have fewer problems of discipline, or that he is striving for status.

² F. H. Dolan, "The Preparation of Junior College Teachers," *Junior College Journal* XXII (February 1952), p. 334.

But apparently moving from high school to junior college is not just evidence of a teacher's desire for upward vertical mobility. We mentioned earlier that junior college administrators actively recruit from the ranks of high school teachers, some by preference. An article in the *Junior College Journal* of December 1950 reports that 63 percent of the heads of 58 California junior colleges prefer instructors with high school teaching experience.

Conclusion

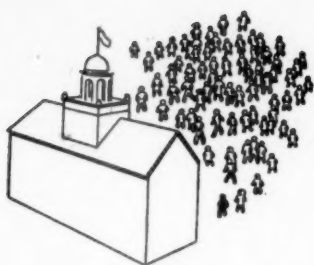
We do not know yet what effect the "forgiveness" clause of title II (loans to students in institutions of higher education) of the National Defense Education Act of 1958 will have on future needs for public school teachers. No doubt a considerable number of recipients of student loan funds will teach in public schools to cancel out as much as 50 percent of their loan.³

We do know that the birth rates of the 1940's were high, those of the 1930's low. As a result, all other things being equal, the present decade cannot produce the necessary number of teachers and other professional workers to take care of the oncoming generation.

But all factors are not remaining equal. For example, the economy has become more technical with a consequent upgrading of occupations. Along with sociological and other factors, this has led to an increasing percentage of our young people going on to college.

It seems clear that school administrators should take a cold, hard look at their teacher personnel recruitment and retention practices. If they do not, they may suffer both quantitative and qualitative losses on their teaching staffs.

³ If a borrower becomes a full-time teacher in a public elementary or secondary school, up to half of the loan (plus the interest on that half) will be forgiven at the rate of 10 percent a year.



ENROLLMENT, TEACHERS, and SCHOOLHOUSING

Highlights from the fall 1959 survey of public schools

EVERY year the Office of Education publishes data gathered from State departments of education on selected basic items of information about the public elementary and secondary schools in the United States. This year's report, which summarizes the fall 1959 survey, is being issued in January. National totals in the report are for the 50 States and the District of Columbia. To facilitate comparison with the preceding year, figures for 1958 have been adjusted to a 50-State basis even though Alaska and Hawaii did not attain statehood until this year.

Some of the facts reported by the States in this survey are these:

Pupil Enrollments

35,286,000 pupils were enrolled in the fall of 1959—an increase of 1,205,000, or 3.5 percent over the fall of 1958.

Classroom Teachers

1,367,000 classroom teachers were employed in the fall of 1959—an increase of 61,000, or 4.7 percent over the year before.

Substandard Credentials

98,800 teachers had substandard credentials in the fall of 1959—an increase of 5,800, or 6.3 percent, over the year before. The percent of all teachers with such credentials rose from 7.1 percent to 7.2 percent.

Figures given here are from Office of Education Circular No. 604, *Fall 1959 Statistics on Enrollment, Teachers, and Schoolhousing in Full-Time Public Elementary and Secondary Day Schools*, by Samuel Schloss and Carol Joy Hobson.

Instruction Rooms Completed

70,000 instruction rooms were completed during 1958-59. These were 2.9 percent less than the 72,100 completed in the previous year.

Instruction Rooms Scheduled for Completion

62,700 rooms are scheduled for completion in 1959-60—a decrease of 10.4 percent from the 70,000 rooms completed in 1958-59.

Instruction Rooms Abandoned

16,400 instruction rooms were abandoned during 1958-59, as compared with 17,400 in 1957-58, chiefly because of obsolescence of the buildings and reorganization and consolidation of school districts.

Pupils in Excess of Capacity

1,883,000 pupils (5.3 percent of total enrollment) were in excess of the normal capacity of the accessible publicly owned school plants in use in the fall of 1959, as compared with 1,850,300 pupils (5.4 percent of total enrollment) in the fall of 1958. (Arthur S. Flemming, Secretary of Health, Education, and Welfare, pointed out in a press conference last August that it is not only the actual number of pupils in excess of normal classroom capacity who suffer from overcrowding, but all the other pupils sharing the same crowded school quarters with them.)

Classroom Shortage

132,400 additional instruction rooms were needed in the fall of 1959, a 6.7 percent reduction from the 141,900 rooms reported as needed a year ago. Of the total classroom shortage this fall, 66,400 rooms were needed to accommodate the pupils in excess of normal capacity (a slight increase over a year ago) and 66,000 rooms were needed to replace unsatisfactory facilities (a 13.2 percent decrease from last year).

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